

We claim:

1. A process for the extractive removal of phenols, alcohols, amines, phosphines, hydroxylamines, hydrazines, oximes, imines, water, carboxylic acids, amino acids, hydroxamic acids, sulfonic acids, peroxycarboxylic acids, phosphonous acids, phosphinous acids, phosphonic acids, phosphinic acids or phosphoric acids from aprotic solvents by means of ionic liquids of the formula  $[K]_n^+[A]^{n-}$ ,

5 where

10  $n$  is 1, 2 or 3;

$[K]^+$  is selected from the group consisting of:

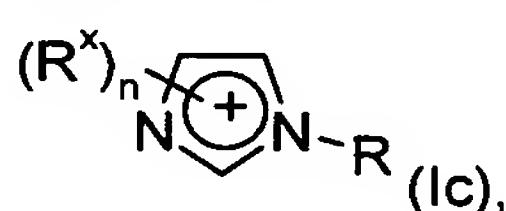
- quaternary ammonium cations of the formula  $[NR^1, R^2, R^3, R^4]^+$  (Ia),
- quaternary phosphonium cations of the formula  $[PR^1, R^2, R^3, R^4]^+$  (Ib),

15 where

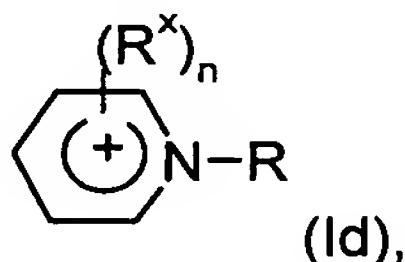
$R^1, R^2, R^3, R^4$  are each  $C_1-C_{12}$ -alkyl or phenyl- $C_1-C_4$ -alkyl, where the aliphatic radicals may bear from 1 to 4 substituents selected from the group consisting of halogen, amino, cyano,  $C_1-C_4$ -alkoxy and the phenyl ring may bear the abovementioned substituents and also  $C_1-C_6$ -alkyl, carboxylate and sulfonate groups;

20  $R^1$  and  $R^2$  may together form a  $C_4-C_5$ -alkenylene radical which may be substituted by  $C_1-C_4$ -alkyl, halogen, cyano or  $C_1-C_4$ -alkoxy;

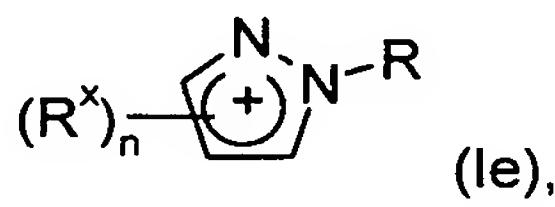
25 • imidazolium cations of the formula,



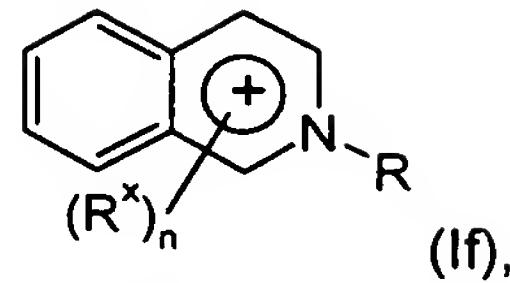
• pyridinium cations of the formula,



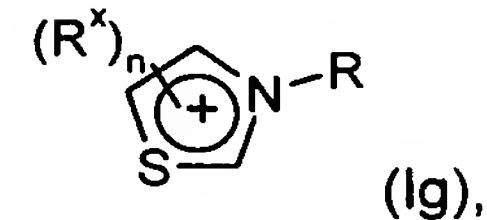
30 • pyrazolium cations of the formula,



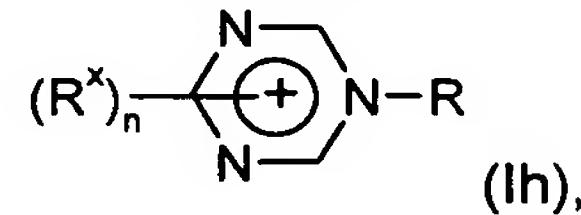
• quinolinium cations of the formula,



- thiazolium cations of the formula,



- triazinium cations of the formula,



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where the index n and the substituents R and  $R^x$  have the following meanings:

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n is 0, 1, 2, 3 or 4;

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R is hydrogen,  $C_1$ - $C_{12}$ -alkyl or phenyl- $C_1$ - $C_4$ -alkyl, where the aliphatic radicals may bear from 1 to 4 substituents selected from the group consisting of halogen, amino, cyano,  $C_1$ - $C_4$ -alkoxy and the phenyl ring may bear the abovementioned substituents and also  $C_1$ - $C_6$ -alkyl, carboxylate and sulfonate groups;

20

$R^x$  is  $C_1$ - $C_6$ -alkyl, halogen, amino, cyano,  $C_1$ - $C_4$ -alkoxy, carboxylate or sulfonate;

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$[A]^{n-}$  is the partly or fully deprotonated anion of an inorganic or organic protic acid  $H_nA$  (III), where n is a positive integer and indicates the charge on the anion.

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2. The process according to claim 1, wherein the organic compound to be extracted is a phenol or alcohol.
3. The process according to claim 1 or 2, wherein the aprotic solvent is a hydrocarbon.
4. The process according to any of claims 1 to 3, wherein the hydrocarbon is an alkane or halogenated alkane.
5. The process according to any of claims 1 to 3, wherein the hydrocarbon is an

arene which is optionally substituted by halogen, nitro, cyano, C<sub>1</sub>-C<sub>3</sub>-alkyl, C<sub>1</sub>-C<sub>3</sub>-alkoxy or methoxycarbonyl.

6. The process according to any of claims 1 to 5, wherein the ionic liquid is an ammonium or imidazolium salt or a mixture of these salts.
- 5 7. The process according to any of claims 1 to 6, wherein the ionic liquid is a sulfate or hydrogensulfate.
- 10 8. The process according to claim 1, 6 or 7, wherein a phenol is removed from chlorobenzene.
9. The process according to any of claims 1 to 8, wherein the extracted impurity is separated off from the ionic liquid by distillation.
- 15 10. The process according to any of claims 1 to 8, wherein the extracted impurity is separated off from the ionic liquid by reextraction.
11. The process according to claim 1, wherein water is removed from an aprotic solvent by extraction.
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